

This listing of claims replaces all prior listings of claims in the application.

Listing of Claims:

1. (Currently amended) An apparatus for directing a laser beam toward a target location on a workpiece in response to ~~[[a]]~~ target location coordinate position command information, the workpiece having a workpiece surface, comprising:

a positioner positioning the workpiece and the laser beam relative to one another in response to the coordinate position command information;

first and second position sensors coupled to the positioner for producing first and second position signals indicative of an actual coordinate position of the positioner;

~~first and second summing junctions comparing~~ processing circuitry implemented to perform comparisons of the coordinate position command information and the first and second position signals and producing first and second to provide from the comparisons one or more error signals indicative of a difference between the coordinate position command information and the actual coordinate position, the difference including a transient signal component representing laser beam position errors at the workpiece surface;

a steering mirror controller ~~coupled to at least the first error signal for system~~ producing ~~at least a [[first]]~~ position correction signal in response to each error signal provided;

a two-axis steering mirror including a pivot point, ~~and responsive to at least the first position correction signal for receiving~~ and positioned to receive the laser beam at or near the pivot point and deflecting, the two-axis steering mirror, in response to the position correction signal, imparting to the laser beam toward the target location on the workpiece angular motions that deflect the laser beam in a manner sufficient to compensate for the laser beam position errors; and

a focusing lens having an entrance pupil ~~located at or near the pivot point for receiving and focusing~~ and positioned to receive the deflected laser beam and focus it on the target location of the workpiece, the entrance pupil being set at or near the pivot point to provide a substantially distortion-free deflected laser beam.

2. (Currently amended) The apparatus of claim 1 in which the position correction signal includes first and second position correction signal portions, the steering mirror controller system includes first and second steering mirror controllers, and the one or more error signals include first and second error signals that produce first and second position correction signals to which the first and second steering mirror controller is coupled to the second error signal for controllers respond, and the first and second steering mirror

controllers producing [[a]] the respective first and second position correction signal, and in portions to which the two-axis steering mirror is further responsive to the second position correction signal for deflecting responds to deflect the laser beam.

3. (Currently amended) The apparatus of claim 1 in which the coordinate position command information includes information for positioning the positioner to respective X-axis and Y-axis orthogonal coordinate locations.

4. (Currently amended) The apparatus of claim ~~[[1]]~~ 2 in which the first and second error signals conform to a first coordinate system and the motion of the two-axis steering mirror is ~~responsive~~ characterized with reference to a second coordinate system, and in which the apparatus further includes a coordinate transform generator for converting at least one of the first and second error signals to the second coordinate system.

5. (Currently amended) The apparatus of claim 1 in which the ~~apparatus further steering mirror controller system~~ includes ~~[[a]] first and second steering mirror controller controllers,~~ and in which the target location coordinate position command ~~further~~ information includes mirror positioning information, the first and second steering mirror controllers positioning the two-axis steering mirror in response to the mirror positioning information and ~~at least the [[first]] position correction signal.~~

6. (Canceled)

7. (Original) The apparatus of claim 1 in which the two-axis steering mirror is positioned by at least one piezo electric actuator.

8. (Original) The apparatus of claim 1 in which the two-axis steering mirror is positioned by at least one voice coil actuator.

9. (Currently amended) The apparatus of claim 1 in which the position correction signal includes a series of position correction signal components, and in which the positioner scans the workpiece and the laser beam relative to one another in a second axis direction in response to a series of ~~[[the]] coordinate position commands~~ command information while the two-axis steering mirror is responsive to ~~[[a]] the series of the first position correction signals for receiving signal components to receive the laser beam and deflecting the laser beam~~ deflect it toward a set of the target locations on the workpiece.

10. (Canceled)

11. (Original) The apparatus of claim 1 in which the workpiece includes an integrated memory circuit and in which the target location includes a severable link for removing a defective memory cell.

12. (Original) The apparatus of claim 1 in which the workpiece includes an electronic circuit element that is trimmed to a predetermined performance characteristic by the laser beam.

13. (Original) The apparatus of claim 1 in which the positioner includes stages that are arranged in a stacked configuration.

14. (Original) The apparatus of claim 1 in which the positioner includes stages that are arranged in a split-axis configuration.

15. (Original) The apparatus of claim 1 in which the positioner includes a planar positioning stage.

16. (Currently amended) A method for directing a laser beam toward a target location on a workpiece in response to ~~[[a]]~~ target location coordinate position command information, the workpiece having a workpiece surface, comprising:

positioning the workpiece and the laser beam relative to one another in response to the coordinate position command information;

sensing an actual coordinate position of the workpiece relative to the coordinate position command information;

producing ~~first and second~~ one or more error signals indicative of a difference between the coordinate position command information and the actual coordinate position, the difference including a transient signal component representing laser beam position errors at the workpiece surface;

producing ~~at least a [[first]]~~ position correction signal in response to ~~one of the first and second error signals~~ each error signal produced;

positioning a two-axis steering mirror including a pivot point ~~in response to at least the first position correction signal~~ for receiving the laser beam at or near the pivot point ~~and deflecting, the two-axis steering mirror, in response to the position correction signal, imparting to the laser beam toward the target location on the workpiece angular motions that deflect the laser beam in a manner sufficient to compensate for the laser beam position errors~~; and

providing a focusing lens having an entrance pupil ~~located at or near the pivot point for receiving and focusing~~ and positioned to receive the deflected laser beam toward and focus it on the target location on the workpiece, the entrance pupil being set at or near the pivot point to provide a substantially distortion-free deflected laser beam at the workpiece surface.

17. (Currently amended) The method of claim 16 ~~further including producing a~~ in which the one or more error signals include first and second error signals and the position correction signal includes first and second position correction signal portions, the first and second position correction signal portions produced in response to the ~~other one of the~~ respective first and second error signals, ~~and positioning to position~~ the two-axis steering mirror ~~in response to the first and second position correction signals.~~

18. (Currently amended) The method of claim 16 in which the coordinate position command information includes X-axis and Y-axis orthogonal coordinate locations.

19. (Currently amended) The method of claim 16 in which the ~~first and second one~~ or more error signals conform to a first coordinate system and the ~~[[a]] motion of the~~ two-axis steering mirror is ~~responsive~~ characterized with reference to a second coordinate system, and in which the method further includes transforming at least one of the ~~first and second~~ error signals into the second coordinate system.

20. (Currently amended) The method of claim 16 in which the target location coordinate position command information includes mirror positioning information, and the method further includes positioning the two-axis steering mirror in response to the mirror positioning information and ~~at least the~~ [[first]] position correction signal.

21. (Canceled)

22. (Currently amended) The method of claim 16 in which the position correction signal includes a series of position correction signal components, and further including;

scanning the workpiece and the laser beam relative to one another in a second axis direction in response to a series of ~~[[the]]~~ coordinate position ~~commands~~ command information; and

moving the two-axis steering mirror in response to ~~[[a]]~~ the series of ~~the first~~ position correction ~~signals~~ signal components.

23-27 (Canceled)